THE HANFORD SITE

Hanford Tank Farms

Fact Sheet – May 2021

Underground Waste Storage

Hanford is home to 177 underground waste storage tanks: 149 single-shell tanks (SST) and 28 double-shell tanks (DST), ranging from 0.055 to 1.265 million gallons in capacity. Those tanks are organized into 18 different groups, called farms.

During the nation's defense effort in World War II, Hanford was built with secrecy and speed while workers did their best to safeguard the environment by building nuclear waste storage tanks.

The first SSTs were put into service in 1944 and were designed to be in use for about 20 years. They were built with a carbon-steel liner surrounded by a layer of thick steel-reinforced concrete and buried 10 feet below ground. Currently all SSTs are well past their design lives and no longer meet regulatory requirements. In the 1950s the SSTs began leaking waste into the surrounding soil. The waste has now been stabilized by removing all free liquid, minimizing the chance of further leakage.

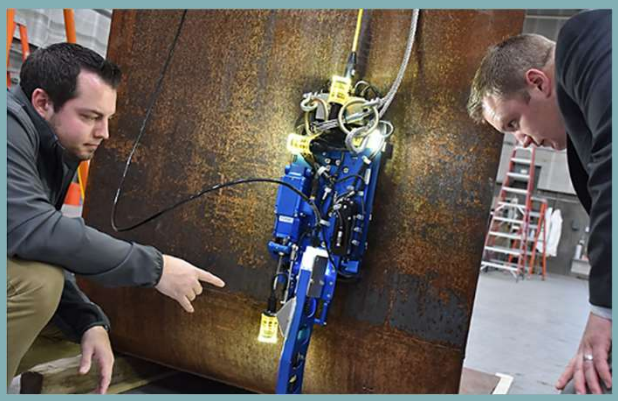
Hanford Tank Farms under construction.

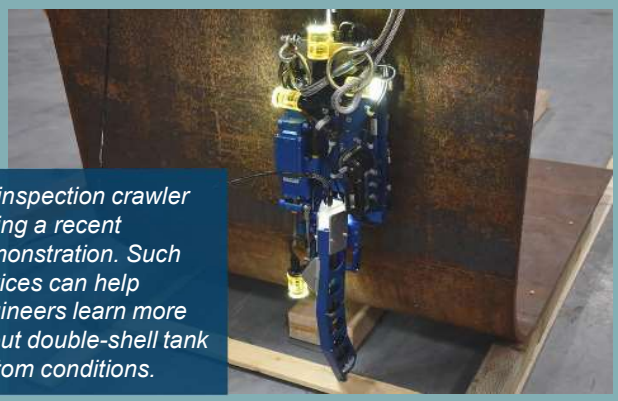
Underground Waste Storage (cont.)

Construction of DSTs began in 1968. Each DST has a carbon-steel inner tank with a separate steel liner surrounding it. The tank liners are separated by an air space, or annulus, of about 30 inches, equipped with a leak-detection system. Unlike Hanford's SSTs, the DSTs still meet federal and state regulations. But even the DSTs are starting to show signs of aging. In 2012, it was discovered that the oldest of Hanford's DSTs — Tank AY-102 — leaked a small amount of waste into its annulus. The annulus performed as expected and contained the waste. The tank was taken out of service and the waste within it was retrieved and transferred to another DST.

Tank Integrity Program

A contractor team of engineers, supported by a group of independent experts, regularly reviews pertinent information regarding construction and operation of Hanford's waste tanks. These experts monitor the integrity of the tanks via a program that examines waste chemistry, corrosion rates, storage histories, and changing conditions. Periodic tank inspections are performed with ultrasonic testing, visual inspection and waste sampling. These inspections alert engineers to any potential issues regarding the structural integrity of the underground waste storage tanks.





An inspection crawler during a recent demonstration. Such devices can help engineers learn more about double-shell tank bottom conditions.

Tank Storage Space

Another critical part of managing the waste relates to the amount of available storage space in the tanks. As the last operating nuclear processing facility at Hanford, the 242-A Evaporator is critical to the cleanup mission. The evaporator heats tank waste to a boil. Vapor from the boiling waste is collected, condensed, filtered, and sent to another Hanford facility for treatment, resulting in a reduced volume of tank waste. The remaining concentrated waste is transferred back to a DST.

In the last several years, the 242-A Evaporator has undergone major upgrades. Workers finished modernizing the ventilation, monitoring and control systems, have rebuilt systems, and have procured critical spare parts.

The 242-A Evaporator is the workhorse that allows waste to be transferred from SSTs to DSTs.

A worker reinstalls a flange on 242-A Evaporator ductwork.